[Edition of October, 1904.]

United States Department of Agriculture,

BUREAU OF SOILS.

LIST OF PUBLICATIONS OF THE BUREAU OF SOILS.

[The publications having a price attached can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., if the proper sum is sent in postal notes or currency.]

ANNUAL REPORTS.

[The annual reports of the Chief of the Division of Soils are bound with those of the Secretary of Agriculture and since 1896 have also been published separately.]

Report of the Chief of the Division of Agricultural Soils for 1894. By Milton Whitney. In Annual Report Secretary of Agriculture for 1894. Pp. 199–201. (Exhausted.)

Report of the Chief of the Division of Agricultural Soils for 1895. By Milton Whitney. In Annual Report Secretary of Agriculture for 1895. Pp. 179–182. (Exhausted.)

Report of the Chief of the Division of Agricultural Soils for 1896. By Milton Whitney. Pp. 239–242. 1896. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1896.)

Report of the Chief of the Division of Soils for 1897. By Milton Whitney. Pp. 153–157. 1897. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1897.)

Report of the Chief of the Division of Soils for 1898. By Milton Whitney. Pp. 133–142. 1898. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1898.)

Report of the Chief of the Division of Soils for 1899. By Milton Whitney. Pp. 101–111. 1899. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1899.)

Report of the Chief of the Division of Soils for 1900. By Milton Whitney. Pp. 67–83. 1900. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1900.)

Report of the Chief of the Division of Soils for 1901. By Milton Whitney. Pp. 113–140. 1901. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1901.)

Report of the Chief of the Bureau of Soils for 1902. By Milton Whitney. Pp. 40–75. 1902. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1902.)

Report of the Chief of the Bureau of Soils for 1903. By Milton Whitney. Pp. 199–226. 1903. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1903.)

BULLETINS.

Bulletin No. 1. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of May, 1895. Pp. 16, diags. 14. 1895. Price 5 cents. (Exhausted.) (3)

The marked effect of different amounts of rain upon the yield and quantity of crops is familiar to all in the everyday experience of farmers. It is shown in the records here presented from fourteen selected localities in four States that, owing to the difference in the texture of the soils, even with the same amount of rainfall, soils retain very different amounts of water. As crops require very different conditions of water for their best development, this difference in the water content of soils very largely accounts for the peculiar adaptation of certain soils to certain classes of crops.

Bulletin No. 2. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of June, 1895. Pp. 16, diags. 19. 1895. Price 5 cents. (4)

The records described in Bulletin No. 1 are continued and records are given from other places. Particular attention is called to the great differences in water content of soils adapted to different kinds of tobacco and to grass and early truck crops.

Bulletin No. 3. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of July, 1895. Pp. 23, diags. 20. 1895. Price 5 cents. (Exhausted.) (5)

The records above described are continued and records from some additional places are given. The mechanical analyses of some of the soils are given, showing great differences in the texture of the soils, which accounts for the differences in water content and for the differences in the character of the crops grown.

Bulletin No. 4. Methods of the Mechanical Analysis of Soils and of the Determination of the Amount of Moisture in Soils in the Field. Pp. 24, fig. 1. 1896. Price 5 cents. (Exhausted.) (6)

A description of the methods of mechanical analysis of soils and of the determination of moisture in arable soils, for the instruction of the observers and special agents of the Division and for the information of workers in the agricultural colleges and experiment stations. These methods have since been materially modified.

Bulletin No. 5. Texture of Some Important Soil Formations. Pp. 23, pls. 35. 1896. Price 15 cents. (Exhausted.) (7)

The investigations of this Division on the physical properties of soils throw an important light upon the relation of soils to crops and upon the local distribution of crops. It is not claimed that these are the only factors determining the relation of soils to crops, but it is believed that these investigations show that the physical conditions in many of these great soil areas have such a predominating influence upon the life and development of plants as to be a controlling factor in the distribution of crops.

Bulletin No. 6. An Electrical Method of Determining the Moisture Content of Arable Soils. By Milton Whitney, Frank D. Gardner, and Lyman J. Briggs. Pp. 26, figs. 6. 1899. Price 5 cents. (8)

This is a technical bulletin, describing a new electrical method for determining the moisture content of soils in the field, intended mainly for those interested in the development of soil investigations.

Bulletin No. 7. An Electrical Method of Determining the Temperature of Soils. By Milton Whitney and Lyman J. Briggs. Pp. 15, fig. 1. 1899. Price 5 cents. (9)

This is a technical bulletin describing a new electrical method of determining the temperature of soils.

Bulletin No. 8. An Electrical Method of Determining the Soluble Salt Content of Soils, with some Results of Investigations on the Effect of Water and Soluble Salts on the Electrical Resistance of Soils. By Milton Whitney and Thos. H. Means. Pp. 30, figs. 6. 1897. Price 5 cents. (10)

A new electrical method for determining the soluble salt content of soils in the field, which has been somewhat modified for use in the survey and mapping of alkali lands in the arid portions of the West.

Bulletin No. 9. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Crop Season of 1896. By Milton Whitney and Ralph S. Hosmer. Pp. 23, diags. 12. 1897. Price 5 cents. (11)

The results of the moisture records in typical soils in different parts of the United States, establishing for the first time the lines of excess of moisture and of drought in a number of these soils, and discussing the conditions influencing the relations of soils to water.

Bulletin No. 10. The Mechanics of Soil Moisture. By Lyman J. Briggs. Pp. 24, figs. 7. Price 5 cents. (12)

A technical bulletin for the student of agricultural science, explaining more fully and clearly than ever before the actual cause of the capillary movement of water in soils. It gives a clearer knowledge of the laws and principles governing this movement than we have ever before possessed, which, it is needless to say, is a subject of vast practical importance to the agriculturist, as the relation of soils to water and the movement of water in the soil, away from or up to the plant, largely determines the class of crops which can be successfully grown. It discusses the properties of water affecting its retention and movement in the soil, the properties of films of water, the form of the water surface between soil grains, and the influence of salts, temperature, texture, and structure of soils in the acquirement and retention of soil moisture.

Bulletin No. 11. Tobacco Soils of the United States: A Preliminary Report Upon the Soils of the Principal Tobacco Districts. By Milton Whitney. Pp. 47, pls. 13. 1898. Price 10 cents. (13)

The results discussed in this bulletin show a very marked difference in the texture and physical properties of the soils adapted to the different types, classes, and grades of tobacco, and give a basis for the classification of the soils and for determining the class of tobacco which should be raised on them.

Bulletin No. 12. The Electrical Method of Moisture Determination in Soils: Results and Modifications in 1897. By Frank D. Gardner. Pp. 24, figs. 2, pls. 3. 1898. Price 5 cents. (14)

Different sections of the country and different types of soil were selected to give a thorough test to the electrical method of moisture determination in soils in the field. The results herewith recorded were very satisfactory and, besides showing that the method is adapted to general use, the results throw some additional light upon the relation of soils to water.

Bulletin No. 13. A Preliminary Report on the Soils of Florida. By Milton Whitney. Pp. 31, pls. 6, figs. 3. 1898. Price 5 cents. (15)

This report discusses the texture and physical properties of pine lands, hammock lands, Etonia scrub lands, pineapple lands, and the Lafayette formation of western Florida; with a brief description of truck growing and of tobacco growing; and a discussion of the texture, chemical composition, soluble salt content, and moisture content of the principal soil formations of Florida.

Bulletin No. 14. The Alkali Soils of the Yellowstone Valley, from a Preliminary Investigation of the Soils near Billings, Montana. By Milton Whitney and Thos. H. Means. Pp. 39, pls. 17, figs. 3. 1899. Price 15 cents. (21)

This report deals with the origin of the alkali soils; the formation of the soils; the geological structure of the valley at Billings; the method of determining the soluble salt content of soils; the rainfall and seepage; the salt content of soils; with underground maps of the alkali soils of the locality. In general it describes the cause of the rise and accumulation of alkali and the proper methods of treatment to prevent injury from this source and to reclaim the already damaged lands.

Bulletin No. 15. Electrical Instruments for Determining the Moisture, Temperature, and Soluble Salt Content of Soils. By Lyman J. Briggs. Pp. 35, figs. 12. 1899. Price 5 cents. (23)

This is a technical bulletin describing late forms of electrical instruments in use at the present time for determining the moisture, temperature, and soluble salt content of soils.

Bulletin No. 16. Catalogue of the First Four Thousand Samples in the Soil Collection of the Division of Soils. By Milton Whitney. Pp. 145. 1899. Price 10 cents. (25)

This is a bulletin of which only a limited edition was published, describing the soil collection; classifying the samples under each State according to their geological origin and their agricultural value; with a description of the formations represented in the collection, which includes the most important soil formations of the United States and of a few foreign countries.

Bulletin No. 17. Soil Solutions: Their Nature and Functions and the Classification of Alkali Lands. By Frank K. Cameron, in cooperation with the Division of Chemistry. Pp. 39. 1901. Price 5 cents. (41)

This bulletin contains a series of technical papers discussing the nature and function of the aqueous solution of which the soil moisture is composed, in its relation to crop failure, and from the point of view of the hypothesis of electrolytic dissociation. A classification of alkali soils upon a chemical basis is proposed, and the occasional occurrence of alkali conditions in humid areas is considered, with descriptions of certain cases which have come under the author's observations.

Bulletin No. 18. Solution Studies of Salts occurring in Alkali Soils. By Frank K. Cameron, Lyman J. Briggs, and Atherton Seidell. Pp. 89, figs. 10. 1901. Price 5 cents. (42)

This bulletin contains a series of technical papers discussing the equilibrium between carbonates and bicarbonates; the solubility of gypsum and calcium carbonate in aqueous solutions containing soluble salts; the chemical analysis and examination of alkali soils; and the volumetric estimation of carbonates, bicarbonates, and chlorides. This work was undertaken to elucidate difficulties met in field studies of alkali conditions, and practical applications suggested by the laboratory studies are pointed out and discussed.

Bulletin No. 19. Capillary Studies and Filtration of Clay from Soil Solutions. By Lyman J. Briggs and Macy H. Lapham. Pp. 40, figs. 5. 1902. Price 5 cents. (61)

This is a technical bulletin dealing with the influence of dissolved salts on the capillary rise of salt waters and capillary movement of water in dry and moist soils, and the filtration of clay from soil solutions.

Bulletin No. 20. Growing Sumatra Tobacco under Shade in the Connecticut Valley. By Milton Whitney. Pp. 31, pls. 7, figs, 2. 1902. Price 10 cents. (65)

This is a detailed statement relating to the experiments which have been conducted in Connecticut, under the direction of the Bureau of Soils, in connection with the production of a fine type of wrapper tobacco under shade. This bulletin describes in detail the methods of cultivation and handling of the tobacco, including the selection of the land, preparation of seed beds, erection and cost of shade, cultivation, fertilization, harvesting, curing, fermenting, sizing, assorting, baling, and the final results of the experiment, including the cost of each of these operations and the total cost of the crop.

Bulletin No. 21. Reclamation of Alkali Lands in Egypt, as Adapted to Similar Work in the United States. By Thomas H. Means. In Cooperation with the Office of Seed and Plant Introduction, Bureau of Plant Industry. Pp. 48, pls. 8, figs. 6. 1903. Price 15 cents.

This bulletin is a report of information gathered during a visit to Egypt in the summer of 1902. It gives a detailed description of some of the important reclamation work in that country and shows that the methods there in use are applicable to conditions in the United States.

Bulletin No. 22. The Chemistry of the Soil as Related to Crop Production. By Milton Whitney and F. K. Cameron. Pp. 71. 1903. Price 5 cents.

This bulletin is a report of an investigation of the changes taking place during a growing season in the composition and concentration of the soil water in several types of soil under field conditions. It is shown that the chemical data obtained can not be correlated with the known crop production, and that the composition of the soil has no greater importance in determining the yield of crops than has climate, soil management, selection of seed, and other factors. It is further shown that practically all cultivable soils normally supply enough water-soluble, and therefore available, mineral constituents for plant needs and that the desirable effects obtained from the use of mineral fertilizers are not satisfactorily or entirely explained by the hypothesis that they supply needed plant food.

Bulletin No. 23. Investigations in Soil Fertility. By Milton Whitney and F. K. Cameron. Pp. 48, pls. 4, figs. 7. 1904. Price 10 cents.

This bulletin contains a description of experiments upon the movement of water in soils; the ability of seeds to obtain water from the soil; the develop-

ment of root systems in plants as contrasted with the rate of movement of soil moisture; the relative growth of plants in good and poor soils, respectively, and in aqueous extracts of the soils, as well as in artificial nutrient media; and the effect upon plant growth of the presence or absence of organic matter in soils and soil extracts.

Bulletin No. 24. The Centrifugal Method of Mechanical Soil Analysis. By Lyman J. Briggs, F. O. Martin, and J. R. Pearce. Pp. —, pls. 2, figs. 7. 1904. In press.

This bulletin contains a description of the centrifugal method of mechanical soil analysis, as used in the Bureau of Soils, together with an account of certain investigations of the various features of the method. For the information of students, and others interested in the subject of mechanical analysis, a brief description of other methods of mechanical analysis, at present used in the United States, is appended. An account is also given of the chromic-acid digestion method for determining organic matter in soils.

REPORTS OF FIELD OPERATIONS.

The Report of the Field Operations is issued annually and contains the results of the soil survey work of the Bureau for the calendar year named. A general review of the operations of the year by the Chief of the Bureau is presented, showing the progress and cost of the soil survey and giving a general analysis of field reports, with discussions of such important problems as may have arisen. Lithograph maps, drawn on a scale of one mile to the inch, covering each area surveyed, indicate in colors the location and extent of the various soil types, and, in addition, in the western areas, the presence and amount of alkali existing. The reports by assistants in charge of soil surveys treat each area in detail and contain carefully prepared data relating to the location and boundaries of the areas; the history of settlement and agricultural development; climate; physiography and geology; descriptions of soil types with origin and process of formation, crops grown and the yields, the crops to which the soils are especially adapted, special soil problems, irrigation, and drainage; location, origin, composition, and distribution of alkali; reclamation of swamp, exhausted, or alkali lands; agricultural methods in use, cultivation, cropping, rotation, etc., and general agricultural conditions, including the condition of the farming classes, tenure and size of farms, labor, transportation, markets, etc. The first two reports also contain chapters contributed by other members of the staff of the Bureau pertaining to special problems affiliated with soil investigations.

The demand for the annual Reports of Field Operations of the Bureau of Soils for 1899, 1900, 1901, and 1902 have been so great that the quota allotted to the Department for distribution to exchanges, libraries, and other public institutions and to private persons cooperating has been reduced to such an extent that it will be necessary to restrict the distribution of the bound volumes of these publications as much as possible.

Many applications for the reports named are from persons interested in only one or two areas, and to provide for such requests separate reprints of the reports and maps in pamphlet form, covering each of the areas surveyed, have been obtained, which will in many cases answer the purpose of the correspondent. A list of these reports and reprints follows, and any available reprint desired will be forwarded upon application to the Chief of the Bureau of Soils.

Copies of the bound volumes are on sale by the Superintendent of Public Documents, Government Printing Office, Washington, D. C., at the prices named.

Field Operations of the Division of Soils, 1899. (First Report.) By Milton Whitney, Chief of Division. With accompanying papers by Thomas H. Means, Frank D. Gardner, Clarence W. Dorsey, Frank K. Cameron, and Lyman J. Briggs. Pp. 198, pls. 29, figs. 19, lithograph maps 11. 1900. Price 95 cents. (30)

REPRINTS.

A Soil Survey in the Pecos Valley, New Mexico (129 square miles): Two soil maps, 2 alkali maps, 2 underground water maps. By Thomas H. Means and Frank D. Gardner. (Reprint exhausted.)

A Soil Survey in Salt Lake Valley, Utah (249 square miles): One soil map, 1 alkali map, 1 black alkali map, 1 underground water map. By Frank D. Gardner and John Stewart. (Reprint exhausted.)

A Reconnoissance in Sanpete, Cache, and Utah Counties, Utah. By Thomas H. Means. (Reprint exhausted.)

A Reconnoissance in the Cache la Poudre Valley, Colorado. By Thomas H. Means. (Reprint exhausted.)

A Soil Survey in the Connecticut Valley, Connecticut and Massachusetts (388 square miles): One soil map. By Clarence W. Dorsey and Jay A. Bonsteel. (Reprint exhausted.)

Field Operations of the Division of Soils, 1900. (Second Report.) By Milton Whitney, Chief of Division. With accompanying papers by Thomas H. Means, Frank D. Gardner, Clarence W. Dorsey, Jay A. Bonsteel, William G. Smith, J. Garnett Holmes, Frank K. Cameron, Lyman J. Briggs, and Marcus L. Floyd. Pp. 474, pls. 51, figs. 47, lithograph maps 24. 1901. Price $1.80.

REPRINTS.

A Soil Survey around Lancaster, Pennsylvania (269 square miles): One soil map. By Clarence W. Dorsey.

Soil Survey of Montgomery County, Ohio (480 square miles): One soil map. By Clarence W. Dorsey and George N. Coffey.

Soil Survey of Cecil County, Maryland (376 square miles): One soil map. By Clarence W. Dorsey and Jay A. Bonsteel.

Soil Survey of St. Mary County, Maryland (363 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey of Calvert County, Maryland (217 square miles): One soil map. By Jay A. Bonsteel and R. T. Avon Burke.

Soil Survey of Kent County, Maryland (293 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey from Raleigh to Newbern, North Carolina (965 square miles): One soil map. By Wm. G. Smith. (Map exhausted.)

Soil Survey of Weber County, Utah (310 square miles): One soil map, 1 alkali map, 1 underground water map. By Frank D. Gardner and Charles A. Jensen. (Reprint exhausted.)

Soil Survey in the Sevier Valley, Utah (235 square miles): Two soil maps, 2 alkali maps. By Frank D. Gardner and Charles A. Jensen. (Reprint exhausted.)

Soil Survey in Salt River Valley, Arizona (449 square miles): Three soil maps. By Thomas H. Means. (Reprint exhausted.)

Soil Survey around Fresno, California (628 square miles): One soil map, 1 alkali map. By Thomas H. Means and J. Garnett Holmes. (Reprint exhausted.)

Soil Survey around Santa Ana, California (275 square miles): One soil map, 1 alkali map. By J. Garnett Holmes. (Reprint exhausted.)

Field Operations of the Bureau of Soils, 1901. (Third Report.) By Milton Whitney, Chief of Bureau. With accompanying papers by assistants in charge of field parties. Pp. 647, pls. 96, figs. 25, lithograph maps 31. 1902. Price $2.25.

REPRINTS.

Soil Survey of the Westfield Area, New York (260 square miles): One soil map. By R. T. Avon Burke and Herbert W. Marean.

Soil Survey of Allegan County, Michigan (828 square miles): One soil map. By Elmer O. Fippin and Thomas D. Rice.

Soil Survey of the Salem Area, New Jersey (493 square miles): One soil map. By Jay A. Bonsteel and F. W. Taylor.

Soil Survey of the Lebanon Area, Pennsylvania (669 square miles): One soil map. By W. G. Smith and Frank Bennett, jr.

Soil Survey of Prince George County, Maryland (480 square miles): One soil map. By Jay A. Bonsteel and party.

Soil Survey of Harford County, Maryland (418 square miles): One soil map. By W. G. Smith and J. O. Martin.

Soil Survey of the Bedford Area, Virginia (632 square miles): One soil map. By Charles N. Mooney, F. O. Martin, and Thomas A. Caine.

Soil Survey of the Prince Edward Area, Virginia (430 square miles): One soil map. By Charles N. Mooney and Thomas A. Caine.

Soil Survey of the Statesville Area, North Carolina (784 square miles): One soil map. By Clarence W. Dorsey and party.

Soil Survey of Alamance County, North Carolina (365 square miles): One soil map. By George N. Coffey and W. Edward Hearn.

Soil Survey of the Cary Area, North Carolina (63 square miles): One soil map (colored plate). By George N. Coffey and W. Edward Hearn. (Reprint exhausted.)

Soil Survey of Cobb County, Georgia (346 square miles): One soil map. By R. T. Avon Burke and Herbert W. Marean.

Soil Survey of the Covington Area, Georgia (225 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Clarksville Area, Tennessee (547 square miles): One soil map. By J. E. Lapham and M. F. Miller.

Soil Survey of the Yazoo Area, Mississippi (656 square miles): Two soil maps. By Jay A. Bonsteel and party.

Soil Survey of the Yakima Area, Washington (309 square miles): Two soil maps, 1 alkali map (colored plate), 1 black alkali map (colored plate), 2 underground water maps (colored plates). By Charles A. Jensen and B. A. Olshausen.

Soil Survey of the Boise Area, Idaho (399 square miles): Two soil maps, 1 alkali map, 1 black alkali map. By Charles A. Jensen and B. A. Olshausen.

Soil Survey of the Hanford Area, California (216 square miles): One soil map, 1 alkali map, 1 black alkali map (colored plate), 1 underground water map (colored plate). By Macy H. Lapham and W. H. Heileman.

Soil Survey of the Lower Salinas Valley, California (344 square miles): Two soil maps, 1 underground water map (colored plate). By Macy H. Lapham.

Soil Survey of the Ventura Area, California (240 square miles): One soil map, 1 alkali map. By J. Garnett Holmes and Louis Mesmer.

Soil Survey of the San Gabriel Area, California (259 square miles): One soil map. By J. Garnett Holmes and Louis Mesmer.

Soil Survey of the Imperial Area, California (169 square miles): One soil map, 1 alkali map. By Thomas H. Means and J. Garnett Holmes.

Soil Survey of the Willis Area, Montgomery County, Texas (215 square miles): One soil map (colored plate). By J. O. Martin.

Soil Survey of the Lake Charles Area, Louisiana (202 square miles): One soil map. By W. H. Heileman and Louis Mesmer.

Field Operations of the Bureau of Soils, 1902. (Fourth Report.) By Milton Whitney, Chief. With accompanying papers by assistants in charge of field parties. Pp. 842, pls. 60, figs. 25, maps 44. 1904. Price, cloth, $3.80.

REPRINTS.

Soil Survey of the Bigflats Area, New York (223 square miles): One soil map. By Louis Mesmer and W. Edward Hearn.

Soil Survey of the Lyons Area, New York (515 square miles): One soil map. By W. Edward Hearn.

Soil Survey of the Trenton Area, New Jersey (810 square miles): One soil map. By R. T. Avon Burke and Henry J. Wilder.

Soil Survey of the Albemarle Area, Virginia (1,410 square miles): Three soil maps. By Charles N. Mooney and F. E. Bonsteel.

Soil Survey of the Hickory Area, North Carolina (988 square miles): Two soil maps. By Thomas A. Caine.

Soil Survey of the Mount Mitchell Area, North Carolina (497 square miles): One soil map. By Thomas A. Caine and A. W. Mangum.

Soil Survey of the Abbeville Area, South Carolina (1,006 square miles): Two soil maps. By F. W. Taylor and Thomas D. Rice.

Soil Survey of the Darlington Area, South Carolina (595 square miles): One soil map. By Thomas D. Rice and F. W. Taylor.

Soil Survey of Perry County, Alabama (762 square miles): One soil map. By R. T. Avon Burke and party.

Soil Survey of the Smedes Area, Mississippi (463 square miles): Two soil maps. By William G. Smith and William T. Carter, jr.

Soil Survey of the Brazoria Area, Texas (845 square miles): Two soil maps. By Frank Bennett, jr., and Grove B. Jones.

Soil Survey of the Vernon Area, Texas (277 square miles): One soil map. By J. E. Lapham and party.

Soil Survey of the Toledo Area, Ohio (403 square miles): One soil map. By William G. Smith.

Soil Survey of the Columbus Area, Ohio (472 square miles): One soil map. By William G. Smith.

Soil Survey of Union County, Kentucky (361 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Posey County, Indiana (387 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Tazewell County, Illinois (645 square miles): One soil map. By Jay A. Bonsteel, George N. Coffey, and party, in cooperation with the Illinois Experiment Station.

Soil Survey of Clinton County, Illinois (491 square miles): One soil map. By Jay A. Bonsteel and party, in cooperation with the Illinois Experiment Station.

Soil Survey of St. Clair County, Illinois (650 square miles): One soil map. By George N. Coffey and party, in cooperation with the Illinois Experiment Station.

Soil Survey of Clay County, Illinois (460 square miles): One soil map. By George N. Coffey and party, in cooperation with the Illinois Experiment Station.

Soil Survey of the Janesville Area, Wisconsin (451 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey of the Dubuque Area, Iowa (440 square miles): One soil map. By Elmer O. Fippin.

Soil Survey of Howell County, Missouri (919 square miles): One soil map. By Elmer O. Fippin and James L. Burgess.

Soil Survey of the Stuttgart Area, Arkansas (251 square miles): One soil map. By J. E. Lapham.

Soil Survey of the Wichita Area, Kansas (465 square miles): One soil map. By J. E. Lapham and B. A. Olshausen.

Soil Survey of the Grand Forks Area, North Dakota (314 square miles): One soil map, 1 alkali map (colored plate), 1 underground water map (colored plate). By Charles A. Jensen and N. P. Neill.

Soil Survey of the Billings Area, Montana (107 square miles): One soil map, 1 alkali map, 1 underground water map, 1 colored plate. By Charles A. Jensen and N. P. Neill.

Soil Survey of the Lewiston Area, Idaho (308 square miles): One soil map. By Louis Mesmer.

Soil Survey of the Walla Walla Area, Washington (201 square miles): One soil map, 1 black alkali map (colored plate). By J. Garnett Holmes.

Soil Survey of the Lower Arkansas Valley, Colorado (945 square miles): Four soil maps, 4 alkali maps (colored plates), 4 underground water maps (colored plates). By Macy H. Lapham and party.

Soil Survey of the Yuma Area, Arizona (99 square miles): One soil map, 1 alkali map. By J. Garnett Holmes.

Soil Survey from Arecibo to Ponce, Porto Rico (330 square miles): One soil map. By Clarence W. Dorsey, Louis Mesmer, and Thomas A. Caine.

Field Operations of the Bureau of Soils, 1903. (Fifth Report.) By Milton Whitney, Chief. With accompanying papers by assistants in charge of field parties. Pp. ——, figs. 61, maps 78. 1904. (In press.)

ADVANCE SHEETS.

Soil Survey of the Fort Payne Area, Alabama (509 square miles): One soil map. By Grove B. Jones and M. E. Carr.

Soil Survey of the Huntsville Area, Alabama (506 square miles): One soil map. By Frank Bennett, jr., and A. M. Griffen.

Soil Survey of the Mobile Area, Alabama (461 square miles): One soil map. By R. T. Avon Burke and party.

Soil Survey of the Solomonsville, Area, Arizona (108 square miles): One soil map, 1 alkali map (Plate I). By Macy H. Lapham and N. P. Neill.

Soil Survey of Miller County, Arkansas (626 square miles): One soil map. By J. O. Martin and E. P. Carr.

Soil Survey of the Imperial Area, California (1,084 square mlles): One soil map, 1 alkali map. By J. Garnett Holmes and party.

Soil Survey of the Indio Area, California (234 square miles): One soil map, 1 alkali map. By J. Garnett Holmes and party.

Soil Survey of the Los Angeles Area, California (570 square miles): One soil map, 1 alkali map. By Louis Mesmer.

Soil Survey of the San Jose Area, California (313 square miles): One soil map. By Macy H. Lapham.

Soil Survey of the San Luis Valley, Colorado (628 square miles): One soil map, 1 alkali map. By J. Garnett Holmes.

Soil Survey of the Connecticut Valley (1,314 square miles): Two soil maps. By Elmer O. Fippin.

Soil Survey of the Dover Area, Delaware (314 square miles): One soil map. By F. E. Bonsteel and O. L. Ayrs.

Soil Survey of Gadsden County, Florida (548 square miles): One soil map. By Elmer O. Fippin and Aldert S. Root.

Soil Survey of the Fort Valley Area, Georgia (186 square miles): One soil map. By William G. Smith and William T. Carter, jr.

Soil Survey of the Blackfoot Area, Idaho (428 square miles): Two soil maps. By W. E. McLendon.

Soil Survey of Johnson County, Illinois (339 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Knox County, Illinois (717 square miles): One soil map. By George N. Coffey and party.

Soil Survey of McLean County, Illinois (1,159 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Sangamon County, Illinois (866 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Winnebago County, Illinois (526 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Madison County, Indiana (435 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of Cerro Gordo County, Iowa (567 square miles): One soil map. By Herbert W. Marean and Grove B. Jones.

Soil Survey of Story County, Iowa (576 square miles): One soil map. By Herbert W. Marean and Grove B. Jones.

Soil Survey of the Parsons Area, Kansas (398 square miles): One soil map. By J. A. Drake.

Soil Survey of the Russell Area, Kansas (270 square miles): One soil map. By A. W. Mangum and J. A. Drake.

Soil Survey of Mason County, Kentucky (225 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of Scott County, Kentucky (280 square miles): One soil map. By R. T. Avon Burke.

Soil Survey of Acadia Parish, Louisiana (636 square miles): One soil map. By Thomas D. Rice and Lewis Griswold.

Soil Survey of the New Orleans Area, Louisiana (410 square miles): One soil map. By Thomas D. Rice and Lewis Griswold.

Soil Survey of the Ouachita Area, Louisiana (605 square miles): One soil map. By Thomas D. Rice and George N. Coffey.

Soil Survey of Worcester County, Maryland (463 square miles): One soil map. By F. E. Bonsteel and William T. Carter, jr.

Soil Survey of the Pontiac Area, Michigan (307 square miles): One soil map. By Henry J. Wilder and W. J. Geib.

Soil Survey of the Marshall Area, Minnesota (233 square miles): One soil map. By Henry J. Wilder.

Soil Survey of Shelby County, Missouri (511 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of the McNeill Area, Mississippi (198 square miles): One soil map. By William G. Smith and William T. Carter, jr.

Soil Survey of the Grand Island Area, Nebraska (446 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Stanton Area, Nebraska (323 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Long Island Area, New York (845 square miles): Two soil maps. By Jay A. Bonsteel and party.

Soil Survey of the Syracuse Area, New York (416 square miles): One soil map. By F. E. Bonsteel, William T. Carter, jr., and O. L. Ayrs.

Soil Survey of the Asheville Area, North Carolina (497 square miles): One soil map. By J. E. Lapham and F. N. Meeker.

Soil Survey of the Craven Area, North Carolina (897 square miles): One soil map. By George N. Coffey and William G. Smith.

Soil Survey of the Fargo Area, North Dakota (406 square miles): One soil map. By Thomas A. Caine.

Soil Survey of the Jamestown Area, North Dakota (496 square miles): One soil map. By Thomas A. Caine and A. E. Kocher.

Soil Survey of Ashtabula County, Ohio (340 square miles): One soil map. By J. O. Martin and E. P. Carr.

Soil Survey of the Baker City Area, Oregon (158 square miles): One soil map, 1 alkali map, 1 black alkali map, 1 underground water map. By Charles A. Jensen and W. W. Mackie.

Soil Survey of the Salem Area, Oregon (284 square miles): One soil map. By Charles A. Jensen.

Soil Survey of the Lockhaven Area, Pennsylvania (278 square miles): One soil map. By J. O. Martin.

Soil Survey of the Campobello Area, South Carolina (515 square miles): One soil map. By A. W. Mangum and Aldert S. Root.

Soil Survey of the Brookings Area, South Dakota (484 square miles): One soil map. By Frank Bennett, jr.

Soil Survey of Davidson County, Tennessee (501 square miles): One soil map. By William G. Smith and Hugh H. Bennett.

Soil Survey of the Pikeville Area, Tennessee (440 square miles): One soil map. By Henry J. Wilder and W. J. Geib.

Soil Survey of the Jacksonville Area, Texas (100 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Lufkin Area, Texas (99 square miles): One soil map. By W. Edward Hearn and party.

Soil Survey of the Nacogdoches Area, Texas (97 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Paris Area, Texas (548 square miles): One soil map. By Thomas A. Caine and A. E. Kocher.

Soil Survey of the Woodville Area, Texas (100 square miles): One soil map. By J. E. Lapham and party.

Soil Survey of the Provo Area, Utah (373 square miles): Two soil maps, 2 alkali maps, 2 black alkali maps (Plates II and III), 2 underground water maps. By Alfred M. Sanchez.

Soil Survey of the Leesburg Area, Virginia (419 square miles): One soil map. By William T. Carter, jr., and W. S. Lyman.

Soil Survey of the Norfolk Area, Virginia (303 square miles): One soil map. By J. E. Lapham.

Soil Survey of the Viroqua Area, Wisconsin (504 square miles): One soil map. By William G. Smith.

Soil Survey of the Laramie Area, Wyoming (309 square miles): One soil map, 1 alkali map, 1 black alkali map. By N. P. Neill and party.

REPORTS.

Report No. 58. Cultivation of Tobacco in Sumatra. By Emile Mulder. Pp. 39, figs. 3, map. 1898. Price 5 cents. (Exhausted.) (20)

So much interest is taken in the growing of cigar wrapper leaf tobacco in this country at present and the competition of Sumatra is so active that it seems important to lay before our tobacco growers all the information possible in regard to the conditions and methods of production in that country. The superiority of the Sumatra leaf is due partly to fashion, as the leaf makes a fine, smooth wrapper, which looks well in a case; partly to economy, as a pound will cover four or five times as many cigars as a pound of domestic leaf, giving very little waste; and partly to fine assortment as to length, color, and shade, which enables small manufacturers to maintain a particular brand with a small stock of wrapper leaf to select from.

Report No. 59. Curing and Fermentation of Cigar Leaf Tobacco. By Oscar Loew. In cooperation with the Division of Vegetable Physiology and Pathology. Pp. 34. 1899. Price 5 cents. (Exhausted.) (16)

This is a rather technical discussion of the changes induced in the curing, fermentation, and aging of tobacco; with the description of the real cause of the fermentation of cigar leaf tobacco, which is of the greatest scientific interest and economic value as giving the basis for better methods of curing and fermenting tobacco.

Report No. 60. Temperature Changes in Fermenting Piles of Cigar Leaf Tobacco. By Milton Whitney and Thos. H. Means, in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 28, figs. 7. 1899. Price 5 cents. (Exhausted.) (18)

This contains a somewhat popular résumé of Dr. Loew's investigation of the cause of fermentation, together with a discussion of the temperature changes in the fermentation of Florida tobacco.

Bulletin No. 62. Cultivation of Cigar Leaf Tobacco in Florida. By Marcus L. Floyd, in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 31, pls. 8, figs. 6. 1899. Price 10 cents. (24)

This is a thoroughly practical description of the method of growing, curing, and handling tobacco in Florida, where the greatest recent advances have been made in the cultivation and curing of cigar leaf tobacco.

Report No. 63. The Work of the Agricultural Experiment Stations on Tobacco. Abstracted by J. S. Schulte, with introduction and comment by Milton Whitney. In cooperation with the Office of Experiment Stations. Pp. 48. 1900. Price 5 cents. (26)

This is a résumé of the work of the experiment stations of the United States on tobacco.

Report No. 65. Physiological Studies of Connecticut Leaf Tobacco. By Oscar Loew. In cooperation with the Division of Vegetable Physiology and Pathology. Pp. 57. 1900. Price 5 cents. (31)

The work herewith recorded deals with a number of questions relating to the physiology of the leaf and the changes which take place during the processes of curing and fermenting tobacco.

Report No. 68. Catalase. A new Enzym of General Occurrence, with special reference to the tobacco plant. By Oscar Loew, cooperating with the Division of Vegetable Physiology and Pathology. Pp. 47. 1901. Price 5 cents. (39)

A technical paper relating to a new enzym occurring in the tobacco plant, and probably having much to do with the fermentation and possibly with the development of the flavor and aroma in tobacco.

Report No. 70. Exhaustion and Abandonment of Soils. Testimony of Milton Whitney, Chief of the Division of Soils, before the Industrial Commission. Pp. 48. 1901. Price 5 cents. (46)

This report gives in considerable detail the causes leading to the exhaustion of soils and the consequent abandonment of large areas of lands in the East and South, and discusses the alkali lands of the West, with suggestions looking to their reclamation. Farming and business methods, social conditions, adaptation of crops to soils, climate, transportation, and the development of new areas and industries, together with suggestions relating to fertilization, rotation, and specialization of crops, irrigation, and drainage, are discussed.

Report No. 71. Some Mutual Relations between Alkali Soils and Vegetation. By Thos. H. Kearney and Frank K. Cameron. Issued in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 78. 1902. Price 5 cents. (44)

This report comprises three technical papers. An investigation is described in which the toxic limits of concentration of certain aqueous solutions for seedlings of the white lupine and alfalfa were determined, the chemical and physiological significance of the results considered, and suggestions of economic applications made. The formation of "black alkali" by vegetation and the resistance to this substance by certain plants is considered in connection with experimental data obtained in field and laboratory studies.

CIRCULARS.

Circular No. 1. Announcement. By Milton Whitney. March, 1894. (Exhausted.) (1)

This contains an announcement of the object, purposes, and lines of work of the Division of Soils when first established.

Circular No. 2. Instructions for Taking Samples of Soil for Moisture Determinations. By Milton Whitney. April, 1894. (Exhausted.) (2)

This contains instructions for taking samples of soils for moisture determinations, issued to the observers and special agents of the Division. The method in use at that time has been greatly modified.

Circular No. 3. The Soils of the Pecos Valley, New Mexico. By Thos. H. Means and Frank D. Gardner. 1900. (27)

This describes in a concise and popular way the climate, drainage area, irrigation systems, and soils of the Roswell, Hagerman, Carlsbad, and Barstow areas of the Pecos Valley. It discusses the character of the water, the kind and amount of alkali in the soils, the cause of the accumulation of alkali, and the methods for preventing injury and for reclaiming already injured lands.

Circular No. 4. A Soil Survey in Salt Lake County, Utah. By Frank D. Gardner, of the Division of Soils, and John Stewart, of the Utah Experiment Station. In cooperation with the Utah Experiment Station. Fig. 1. 1900. (28)

This circular discusses in a popular manner the early irrigation and recent improvements in methods and equipment, the climate, water supply, soils, alkali, and drainage. It discusses in a general way the origin of the alkali, the cause of the accumulation, and the methods of reclaiming damaged lands.

Circular No. 5. Bulk Fermentation of Connecticut Tobacco. By Marcus L. Floyd. In cooperation with the Connecticut Experiment Station. 1900. (29)

This circular describes the ordinary method of fermenting in cases, the method of fermenting in bulk, and the results obtained by fermentation in bulk of some Connecticut tobacco.

Circular No. 6. Instructions for Determining in the Field the Salt Content of Alkali Waters and Soils. By Milton Whitney. March, 1900. (Exhausted.) (32)

A technical paper prepared for the field agents of the Division of Soils in the survey and mapping of alkali lands.

Circular No. 7. Description of a Soil Map of the Connecticut Valley. By Milton Whitney. June, 1900. (37)

A special circular of a very small edition, descriptive of a small separate edition of the Connecticut Valley soil map, to be distributed to a few individuals and institutions for educational purposes.

Circular No. 8. Reclamation of Salt Marsh Lands. By Thos. H. Means. 1901. (45)

At the suggestion of the Entomologist of the Department, who was experimenting with a view to the extermination of mosquitoes in marshes, a preliminary examination of the salt marsh lands in the vicinity of Oyster Bay, Long Island, was made. This circular contains suggestions with regard to reclamation in general for the purpose of washing out salt and removing excess water, cultivation of marsh crops during the reclamation, and the agricultural value of marsh lands.

Circular No. 9. Soil Survey around Imperial, California. By Thos. H. Means and J. Garnett Holmes. Figs. 2. 1902. (62)

A description of the survey of 169 square miles made in the Colorado Desert, San Diego County, Cal., in the vicinity of Imperial; topography; development of the irrigation system; descriptions of soil types encountered; alkali conditions; salt contents of soil types; analyses, and general agricultural conditions and possibilities of improvement.

Circular No. 10. The Use of Alkaline and Saline Waters for Irrigation. By Thos. H. Means.

This circular gives an account of the use of saline waters in irrigation in Algeria and points out that waters much more salty than has hitherto been believed can be used successfully in irrigating certain crops.

Circular No. 11. Reclamation of Alkali Land at Fresno, California. By Thos. H. Means and W. H. Heileman.

A report on the progress of the reclamation of a 20-acre tract of alkali land, near Fresno, Cal. A description is given of the installation of the drainage system and of other steps in the work. The results of this demonstration experiment thus far indicate the ultimate complete reclamation of the lands and prove the method of reclamation by underdrainage to be practicable and economical.

Circular No. 12. Reclamation of Alkali Land near Salt Lake City, Utah. By W. H. Heileman.

A report on the progress of a similar demonstration experiment near Salt Lake City, Utah.

Circular No. 13. The Work of the Bureau of Soils.

A condensed account of the work of the Bureau of Soils, with particular attention to its practical side.

FARMERS' BULLETINS.

Farmers' Bulletin No. 40. Farm Drainage. By C. G. Elliott, C. E., Member of the American Society of Civil Engineers, Peoria, Ill. Pp. 24, figs. 6.

This bulletin discusses the structure of soils and its relation to their drainage, natural and artificial drainage, surface drainage and underdrainage, tile drainage, open drains, and construction of open ditches.

Farmers' Bulletin No. 60. Methods of Curing Tobacco. (Revised edition.) By Milton Whitney. Pp. 16. (15)

This bulletin discusses the curing of northern cigar tobacco, curing tobacco in Florida, curing White Burley tobacco, curing bright yellow tobacco, curing export tobacco, marketing tobacco, and the types of tobacco.

Farmers' Bulletin No. 82. The Culture of Tobacco. By Otto Carl Butterweck. Pp. 24. (17)

This bulletin describes the selecting of seed, the seed bed and how prepared in the different tobacco districts, sowing the seed, time of sowing seed, planting, cultivation, fertilizers, topping, cutting, saving seed, and the insect pests.

Farmers' Bulletin No. 83. Tobacco Soils. By Milton Whitney. Pp. 23, fig. 1. (19)

This discusses the climate, distribution of tobacco, soils of the several districts, and the water content of tobacco soils.

Farmers' Bulletin No. 88. Alkali Lands. By Milton Whitney and Thos. H. Means. Pp. 22, fig. 1. (22)

The material in this bulletin is rewritten in popular style from material contained in Bulletin No. 14, a technical publication relating to alkali soils. It shows the conditions in the Yellowstone Valley; rainfall and seepage; the method of making salt determinations; types of soils in the valley, with effects of underdrainage in removing salts, etc.

List of Publications of the Division of Soils, edition of July, 1900. (38)

REPRINTS.

Truck Lands of the Atlantic Seaboard. By Milton Whitney. Pp. 129–153, figs. 3. Yearbook, 1894.

Tobacco Soils of Connecticut and Pennsylvania. By Milton Whitney. Pp. 143–155, figs. 7. Yearbook, 1894.

Reasons for Cultivating the Soil. By Milton Whitney. Pp. 123–130. Yearbook, 1895. (Exhausted.)

Division of Soils. By Milton Whitney. Pp. 122–135. Yearbook, 1897. (Exhausted.)

Some Interesting Soil Problems. By Milton Whitney. Pp. 429–440. Yearbook, 1897. (Exhausted.)

The Movement and Retention of Water in Soils. By Lyman J. Briggs. Pp. 399–404. Yearbook, 1898 (Exhausted.)

The Soluble Mineral Matter of Soils. By Thos. H. Means. Pp. 495–504. Yearbook, 1898. (Exhausted.)

Soil Investigations in the United States. By Milton Whitney. Pp. 335–346. Yearbook, 1899.

Growth of the Tobacco Industry. By Milton Whitney and Marcus L. Floyd. Pp. 429–440, 7 plates. Yearbook, 1899.

Application of the Theory of Solutions to the Study of Soils. By Frank K. Cameron. Pp. 141–172. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

Some Necessary Modifications in Methods of Mechanical Analysis as Applied to Alkali Soils. By Lyman J. Briggs. Pp. 173–183, fig. 1, plate, 1. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

Salts as Influencing the Rate of Evaporation from Soils. By Lyman J. Briggs. Pp. 184–198, figs. 8, plate 1. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

The World's Exhibit of Leaf Tobacco at the Paris Exposition of 1900. By Marcus L. Floyd. Pp. 157–166. Yearbook, 1900.

Objects and Methods of Investigating Certain Physical Properties of Soils. By Lyman J. Briggs. Pp. 397–410. Yearbook, 1900. (Exhausted.)

The Purpose of a Soil Survey. By Milton Whitney, Pp. 117–132. Yearbook, 1900. (Exhausted.)

General Review of the Work of the Division of Soils. By Milton Whitney. Pp. 19–60. Field Operations of the Division of Soils, 1900. (Exhausted.) (47)

Investigations on the Physical Properties of Soils. By Lyman J. Briggs. Pp. 413–421, fig. 1. Field operations of the Division of Soils, 1900. (59)

Application of the Theory of Solution to the Study of Soils. By Frank K. Cameron. Pp. 423–453. Field Operations of the Division of Soils, 1900. (60)

Some Results of Investigations in Soil Management. By F. H. King. Pp. 159–174. Yearbook, 1903.

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